

# Water Resources Review Committee Presentation on

## **ABANDONED MINES**

(Progress, Monitoring, Law and Regulations)

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# Colorado Inactive Mine “AML” Reclamation Program



**Addresses hazards and environmental problems associated with abandoned or inactive “legacy” mines.**



**Mine properties that operated prior to 1977 before reclamation laws were enacted.**



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# Summary of Colorado AML Sites

- Estimated over 23,000 Abandoned Mine Land sites throughout Colorado.
- Estimated 500 hard rock mine features causing measureable water quality degradation.
  - Approximately 230 of those are draining mines.
    - 47 addressed with active water treatment.
    - Remaining sites continue to potentially impact water quality.



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## AML Activities

## \$\$\$ Funding Sources \$\$

Program  
Administration

Fed. Office of Surface Mining  
Annual Title IV Grants

Coal Reclamation Projects

Fed. Land Managers (BLM &  
USFS)

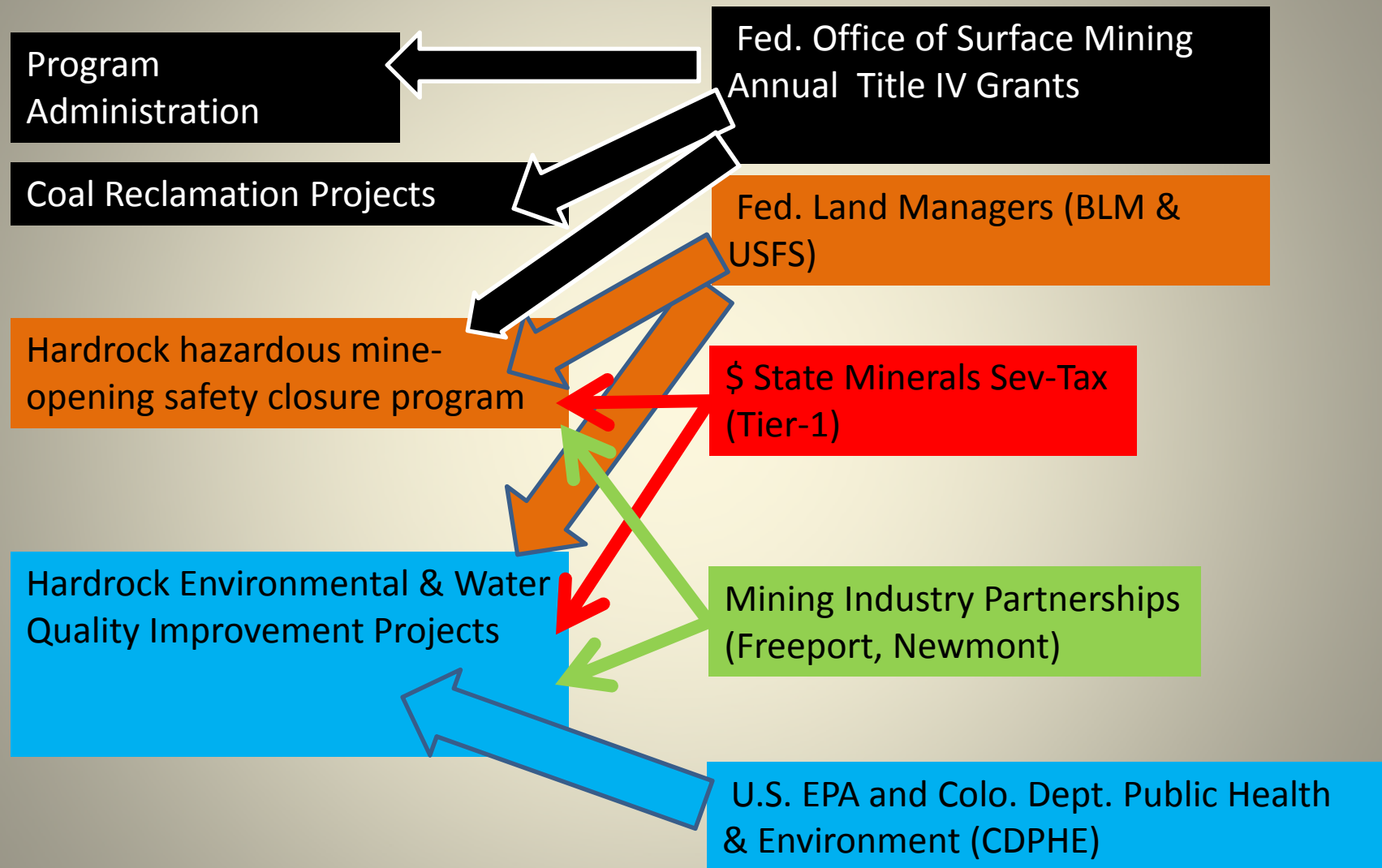
Hardrock hazardous mine-  
opening safety closure program

\$ State Minerals Sev-Tax  
(Tier-1)

Hardrock Environmental & Water  
Quality Improvement Projects

Mining Industry Partnerships  
(Freeport, Newmont)

U.S. EPA and Colo. Dept. Public Health  
& Environment (CDPHE)





# AML Progress and Monitoring

- Safety Closure Projects
- Water Quality Improvement Projects
- Partnership with Local Watershed Groups
- Participation in Mixed-Ownership Group
- Draining Mines Inventory
- Abandoned Mine Land Datahub
- Dept. of Energy – Defense Related Uranium Mine Inventory



# PROJECT SUMMARY SPREADSHEET

## COLO. AML PROGRAM

Fiscal Year 16/17

***All Time Program Count since 1983:  
10,360 hazards safeguarded  
>4,000 acres reclaimed***

	Amount	Number of Projects	No. Hazards Safegaurded	ACRES Reclaimed
Non-coal closures & Maint	\$ 1,159,037.83	24	276	69
Coal Projects & Maint	\$ 2,261,115.01	14	26	13
Enviro & WQ projects	\$ 1,572,892.65	36		17.35
Bond Forfeiture Projects	\$ 518,265.94	8		13.3
Other projects (historical restoration, etc.)	\$ 229,643.93	16		
<b>GRAND TOTAL</b>	<b>\$ 5,740,955.36</b>	<b>98</b>	<b>302</b>	<b>112.65</b>

# Water Quality Improvement Projects

- Recently completed:
  - Venture Mine, Lake County
  - Bullion King Mine, San Juan County
  - Atlas Mill, Ouray County
  - Suncup/Centennial Mine, Dolores County
  - Pennsylvania Mine, Summit County
  - Lancaster Mine, Summit County
- Undergoing Investigation:
  - Waldorf Mine, Clear Creek County
  - Daisy Mine, Gunnison County
  - Carbonero Mine, San Miguel County
  - Gunsight Processing Area, Gunnison County
  - Nelson Tunnel, Mineral County
  - Perigo Mine, Gilpin County
  - Puzzle/Willard Mine, Summit County
  - Bonita Peaks Mining District, San Juan County





# Pennsylvania Mine

- Project site located near Keystone, Summit County and is tributary to the Snake River.
- Collaborative Project between EPA, DRMS, USFS, CDPHE, USGS and Summit County Open Space.
- Project investigations began in 2012 with completion of remedy installation in 2017.
- Constructed 3 concrete bulkheads to control and reduce acid mine drainage into Peru Creek.
- Completed surface reclamation activities in 2015 to reduce storm related loading.
- Resulted in higher downstream pH, reduced metals load, >80% flow reduction from adit.
- DRMS total project costs: \$1.7 million.





# Suncup/Centennial Mine Project



- Project site located near Slick Rock, San Miguel County and is tributary to the Dolores River.
- Collaborative Project between DRMS, Freeport McMoRan, CWCB, CDPHE & BLM.
- Relocated and capped over 48,000 cyds of uranium mine waste.
- Re-graded and revegetated 12 acres.
- Resulted in reduced erosion and storm driven loading.
- Total project costs: \$540,268.02



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# Watershed Group Partnerships

- DRMS provides technical assistance
  - Site investigation
  - Project design
  - Project implementation
- DRMS provides match funding (SevTax)
  - Capacity building
  - Project design and implementation



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# Mixed Ownership Group

- Discussion and planning group implemented to address AML issues in Colorado.
- Collaborative prioritization of AML projects.
- Stakeholders include Federal, State and Local agencies along with NGO organizations.





# Draining Mines Inventory

- DRMS partnered with Water Quality Control Division (CDPHE) to survey and sample draining abandoned mines in 2016.
- 165 mine sites were surveyed and 145 were draining and sampled during visitation.
- Mines sampled in the study are less significant pollutant loaders than those being addressed through EPA Superfund Program.
- Data from study made publicly available.
- <https://erams.com/co-abandoned-mines-water-quality>



# Abandoned Mines Lands Data Hub

- Joint effort headed by CDPHE and CGS to provide a publicly available interactive map of AMLs in Colorado.
- Multiple Federal and State agencies provided information for the database.
- Database includes more than 50,000 records.
- Made publicly available.
  - <https://erams.com/aml>



# Department of Energy Inventory

- Over 1,500 Defense Related Uranium Mines (DRUMs) throughout Colorado.
- DRMS will be assisting DOE with inventory of many of those sites over the next 5 years.
- Inventory will consist of site surveys for physical and environmental hazards.



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# Law and Regulations

- Surface Mining Control and Reclamation Act (SMCRA)
  - Reauthorization required in 2021.
  - House Bill HR1731 (RECLAIM Act)
- CERCLA and Clean Water Act
  - Inhibits partial clean-ups; requires discharge permits; increased liability
- Good Sam Efforts
  - House Bill HR2937 (Community Reclamation Partnership Act)
- Hardrock Legislation
  - 1872 Mining Law Reform
  - National Hardrock Program similar to SMCRA





# Questions?



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